

Half-Lives & Half-Truths

Confronting the Radioactive Legacies of the Cold War



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t h i r t e e n

Nuclear Legacies

*Arrogance, Secrecy, Ignorance, Lies, Silence,
Suffering, Action*

Laura Nader and Hugh Gusterson

Radiation-induced cancer was the first disease to add a new dimension to this problem of cause and effect. This new dimension [lengthy latency period] has been fiercely resisted in many quarters, even ridiculed, in the face of a mountain of evidence that the time period between insult and disease can be measured in decades, not days, weeks, or months. (Gofman 1981:107)

After 15 years of investigating, I have concluded that the US government's atomic weapons industry knowingly and recklessly exposed millions of people to dangerous levels of radiation.... Nothing in our past compares to the official deceit and lying that took place in order to protect the nuclear industry. In the name of national security, politicians and bureaucrats ran roughshod over democracy and morality. Ultimately, the Cold Warriors were willing to sacrifice their own people in their zeal to beat the Russians. (D'Antonio 1993)

—Stewart Udall

The day after the explosion it was clear that northeast winds were spreading radioactive materials over population centers and waterways, so we began evacuating the people from their native villages.... It's amazing that the whole evacuation was completed in a relatively short period and without any resistance from the population...very soon the people adapted to their new conditions and new life. (Gladyshev 1990)

—Mikhail Gladyshev, former director of the Mayak plutonium facility

externalized the health and environmental costs associated with nuclear weapons development either to colonies abroad (for example, Australia for the British, the Pacific Islands for the Americans and French) or to victims of internal colonization (the Shoshone Indians of Nevada in the United States, the Kazakhs of the former Soviet Union, the Uighurs of China). In a process of "radioactive nation-building" (Masco 2006), the lands of indigenous peoples within the boundaries of the nuclear state have become what Valerie Kuletz (1998) calls "national sacrifice zones"; the bodies of the people in these sacrifice zones are expendable. In a little-known subplot of the nuclear age, the Atomic Energy Commission (AEC) and nuclear weapons scientists at the Lawrence Livermore National Laboratory were pushing in the late 1950s and early 1960s to use as many as three hundred nuclear weapons to excavate a new trans-isthmian canal through either Panama or Colombia. They anticipated displacing thirty to forty thousand "natives" who had the misfortune of living too close to the planned canal (Kirsch 2005).

Second, new and formidable practices of secrecy that corrode public dialogue have profoundly deformed public debate and citizens' abilities to hold government accountable. This secrecy emerged, in part, in response to an understandable urge to safeguard the technical secrets underlying nuclear weapons design, but it was also a reflex of governments seeking ways to conceal the terrible costs to the environment, public health, and world peace entailed in nuclear weapons development. Under the guise of safeguarding technical secrets, governments used secrecy laws to punish those seeking to alert their fellow citizens to the dangers of the bomb. Celebrity examples of those who have been thus punished include Robert Oppenheimer (stripped of his security clearance for opposing the hydrogen bomb) in the United States, Andrei Sakharov (sent into internal exile for, among other things, speaking out about the health and environmental consequences of nuclear testing) in the former Soviet Union, and Mordechai Vanunu (kidnapped and put in solitary confinement for several years for telling the international press that his country had a nuclear weapons program) in Israel; but nuclear weapons states are also full of lesser-known citizens who have paid a price for speaking truth to nuclear power—scientists who have lost their jobs, activists who have been watched and harassed, intellectuals whose integrity has been impugned by vulgar nationalists. Moreover, as Richard Falk (1982) has pointed out, nuclear weapons are, by their nature, incompatible with democratic control over the decision to go to war: given that the United States could be utterly destroyed by Russian nuclear weapons with only twenty minutes' warning—not enough time to convene Congress—the power to use (or else lose) nuclear weapons must be delegated to the president. Nuclear weapons are toxic to democracy.

The third defining feature of nuclearism is its reliance on mass practices of "othering." It is very hard to prepare the mass destruction of another society if one recognizes its inhabitants as fellow humans, each with his or her own worth. And it is hard to proclaim the moral unfitness of other societies to possess the weapons of mass destruction one possesses oneself, unless one sees these societies as somehow inferior.

Whether states are actually engaging in the genocide of other peoples (as in the Nazi and Armenian holocausts) or merely rehearsing it (as in all those strangely named Pentagon military exercises), dehumanization of the other is essential to getting the task done. And when citizens of designated enemy societies have been othered and dehumanized in this way, nuclearist societies then also designate as other those within their own societies who threaten the massive binary confrontation with the external other: dissident scientists, intellectuals worried about the morality of preparing for genocide, uranium miners dying an inconvenient death. Especially in moments of national hysteria (the archetype being the McCarthyist period in the United States), such people are liable to be incarcerated, isolated, or socially destroyed.

All this adds up psychologically to the fourth defining feature of nuclearism: mass numbing. Living under the shadow of perpetual mass extinction, living a life of pretended normality in a society that is preparing to exterminate millions of people, practicing routinized indifference to people whose bodies are wrecked by the toxic production and testing of the weapons, and trying not to look too closely at the clumsy and shallow propaganda used to justify the whole endeavor—all this takes a psychic toll. In nuclearist societies, citizenship is often enacted in a context marked by rationalized paranoia in public discourse, nationalist excess, and a dull indifference to the humanity of others.

Because this volume represents insights and contributions by anthropologists, it is worth pausing to contextualize this work within the broader history of American anthropology and its historical complicity with nuclearism and the national security state. Anthropologists, like other scientists, have a mixed and troublesome history with regard to their role in Cold War militarism. Along with other social scientists, anthropologists have been complicit with nuclear weapons testing in some cases and more often have simply let nuclearism proceed unhindered, without demanding a public accounting of its costs.

Anthropology as Intelligence

A number of publications since the 1990s have detailed the role of American anthropologists in World War II and the Cold War that followed (e.g., Foerstel and Gilliam 1992; Nader 1997; Price 1998). The Foerstel and Gilliam volume *Confronting the Margaret Mead Legacy* depicted for one geographic area, the Pacific, the role that anthropologists played in providing intelligence for the national security state by retelling the legacy of one singular and world-renowned American anthropologist. Foerstel and Gilliam singled out Margaret Mead for this telling because she was so well known and well respected, not because others were not also complicit.

Interest in the Pacific did not begin with World War II, since it was during the nineteenth century that most Western colonization took place. The United States annexed Hawaii in 1898, and the Philippines came under US control in 1899. The US Navy administered American Samoa from 1899 to 1951, and of course Great Britain,

then Australia, the French, and others had their own datelines for colonization. Mead represented a kind of science that was comfortable in speaking about primitives, about their locations as laboratories—good places for testing scientific hypotheses. Mead, like others of the same era, had an underlying belief in modernization and progress involving assimilation of Native peoples, although she gave this modernist view a pluralist edge with her romantic evocation of child rearing and gender roles in the Pacific. She and other anthropologists represented the Pacific area as lightly populated by peoples who, compared to highly technological societies, were deemed backward or at least exotic. Representation in ethnographic fieldwork is powerful. Framing the Pacific peoples as being outside of history, a “Pacific where hardly anybody lives,” made these inhabitants of “our” laboratories vulnerable, their land a vacant backdrop against which to dramatize the power of nuclear weapons.

Although you would never know this from the canonical ethnographies of the region, the Pacific was profoundly shaped by nuclear weapons—from the bombing of Hiroshima and Nagasaki to the testing and deployment of nuclear weapons during the Cold War. In the aftermath of World War II, the United States gained twenty-one hundred Micronesian islands as a kind of war booty, and lots of American anthropologists got their PhDs doing fieldwork on peoples whose lives the United States, by consensus it seemed, would permanently administer. Perhaps the silence from anthropology is to be expected, given the number of anthropologists in the Pacific who worked for the US Navy or were supported by the National Research Council to carry out salvage ethnography. Following Operation Crossroads tests in the Marshall Islands in 1946, the Pacific became the premier site for nuclear testing, and large portions of the Marshall Islands trust territory were transformed into a nuclear waste dump. The United States portrayed its waste importation schemes as development, and other nuclear nations also exported their tests and wastes to the region. Few questioned the destruction of the islands and destruction of the health and well-being of their residents; indeed, few seemed informed. Margaret Mead, who had started to consult for the US national security state during World War II, apparently had little knowledge of the dangers of nuclear radiation in the late 1950s, and although her public statements were against nuclear war, she along with countless others had nothing to say about testing in the Pacific. According to Foerstel and Gilliam (1992:128–29), she believed she had a duty to support the national security interests of the United States.

Meanwhile, Pacific peoples were shifted from island to island in the wake of radiation poisoning and contamination—a sad period in human history that anthropologists did little to protest. Gilliam and Foerstel conclude that Mead’s intellectual heritage was an outgrowth of empire. She had a deep belief in progress as a good that would be brought about through Westernization.

In its capacity as the Pacific trust territorial government, the United States closed off Micronesia—3 million square miles of oceanic territory, about the size of the continental United States. The area was militarized, and the people of Bikini became “nuclear nomads,” dislocated by testing (Kiste 1974). As trust territory residents, and

later as independent citizens whose foreign relations were controlled by the United States through a series of treaties establishing "Compacts of Free Association," Pacific Islanders found themselves in a battle "between the representatives of powerful nations who perceive of the Pacific as a nuclear testing ground and those who are increasingly concerned about the damage to their genetic heritage and environment" (Foerstel and Gilliam 1992:268; see also Barker, this volume). Yet over the past fifty-plus years, relatively few American anthropologists or the American Anthropological Association have voiced opposition to this destruction. Luis Kemnitzer and a few others have condemned this silence (Alcalay 1992:195), but even the indigenous move to denuclearize the Pacific region—the Nuclear Free Pacific movement of the 1970s and the Nuclear Free and Independent movement of the 1980s—found little public anthropological support. Today the Marshallese have one of the highest suicide rates in the world and a deteriorated economy. They suffer the long-term consequences of sixty-seven nuclear blasts, and they experience continued contamination from the US Pacific Missile Range Facility at Kwajalein Atoll and related service as the impact site for intercontinental ballistic missiles.²

In little bits and pieces, the consequences of nuclearism came to light—first in Japan, then in the Pacific, the United States, the Arctic, Peru, and Amazonia—in places where anthropologists normally do their work. And slowly a few determined anthropologists studied the uses being made of research, the uses of human subjects, and the nuclear weapons scientists themselves. Interestingly, examination of nuclear institutions came even before victims claimed our attention. Probably the earliest anthropologist-activist was physical anthropologist Earle Reynolds (see Price, this volume), who tried to disrupt nuclear testing in the Pacific and even sailed into Vladivostok in protest over Soviet nuclear testing. Years later, Mead's kind of anthropology was in part thrown into crisis by the Vietnam War, a turning point that forced an examination of US colonialism and empire, as well as an examination of the notion of manifest destiny, which had justified the extension of the United States from the Atlantic to Southeast Asia. Anthropologists recently writing on the subject of militarism and nuclear consequence are a relatively small group. For example, Hugh Gusterson (1996, 2004), Joe Masco (2004, 2006), and Laura McNamara (2001) have written about weapons scientists and their neighboring communities; Robert Kiste (1974), Lenora Foerstel and Angela Gilliam (1992), Glen Alcalay (1992), Barbara Rose Johnston (1994), and Holly Barker (1997, 2004) have written on the Pacific; and Angela Gilliam (1988) and Cathy Lutz (2001) have written on the social dynamics of US militarism. And in recent years anthropologists have also been able to study and publish work on the human effects of nuclear militarism in the former Soviet Union (see, e.g., Garb 1997; Petryna 2002) and French Polynesia (Kahn 2000).

One could, incidentally, tell a broadly similar story about historians' writing on the nuclear age. It was only in the 1960s, during the upheaval of the Vietnam War, that revisionist historians emerged to question the official story and ask whether Americans should really have a clean conscience about the atom bombs. In 1965, in

his book *Atomic Diplomacy*, Gar Alperovitz argued that the United States used the atomic bomb against Japan as much to intimidate the Soviets in the emerging Cold War struggle as because the bomb was necessary to defeat Japan. Further scholarship revealed that the US government had cracked the Japanese code and knew that Japanese leadership was debating surrender and trying to enlist the Soviets as intermediaries in approaching the United States, and that the United States ruthlessly censored discussion of the health and environmental consequences of the bombings in Japan in the years after 1945 (Bernstein 1986; Dower 1995; Lifton and Mitchell 1995; Sherwin 1973; Walker 1990). The evolution in the thinking of professional historians about US nuclear weapons, from passive inhalation of the official point of view to a more muscular interrogation of received wisdom, broadly mirrors the evolution of thinking in anthropology.

From Complicity to Accountability

In this volume, the contributors reexamine the connections between national security states' nuclear policies and the vulnerable peoples on whom nuclear technology was tested—both in the United States and in the former Soviet Union. Although all nuclear states tested on ethnic peoples or minorities of one sort or another—the United States on the mainland, in the Arctic, and in the Pacific; the Soviets in Siberia and Central Asia; the Chinese on the Uighurs; the French in the Sahara and the Pacific; the British on Australian Aborigines—the focus in this volume is on peoples and places victimized by Soviet and US nuclearism.

The papers in this volume are not speaking about the past; the issues are enduring, and the past is the present. The places where nuclear experiments have taken place are still contaminated, and people are still sick and dying. To have their complaints recognized, victims of nuclear testing have to prove that their health problems did not occur prior to nuclear testing. There was no informed consent; for four decades, the Marshallese, to cite one of the worst examples, were human subjects in a nuclear medical science program that was about body parts—thyroids, eyes, bone marrow, blood, and urine—not whole human beings, without knowing they were experimental subjects. Around Hanford in Washington State (Liebow, this volume), some observed health effects defied adequate causal attribution; so despite very well-funded research to prove or disprove such connections, there was no national health insurance to take care of those in need. Besides, the research industry concluded that “no data are available to suggest adverse impacts to the region’s Indian [or white] people.”

Yet again, science is saturated with politics. The story told about Earle Reynolds (Price, this volume), who studied survivors and offspring of Hiroshima—people he saw as his equals—is unusual because he saw through science politics. The unspoken goal of his funders was to use the bodies of Hiroshimans to calculate casualties in a future nuclear war. His dissent—like that of a courageous group of ecologists at the University of Alaska who spoke out against Edward Teller’s plans to excavate a harbor

in Alaska with hydrogen bombs—led to his prompt marginalization in the academy (Kirsch 2005; O'Neill 1994). How free are scientists to dissent? The politicization of science is an issue very much with us today as homeland security programs invade national laboratories and universities with special funding and as government scientists who seek to alert the public to the dangers of global warming find themselves muzzled by the White House.

Human radiation experiments in the 1940s were performed on required human subjects—found in the Marshall Islands, the Arctic, the Andes, the Amazon, and among civilian “volunteers” (soldiers, inmates, students, and minorities). As outlined in Johnston’s chapter on human radiation experimentation (this volume), the United States wanted to model the damage that radiation caused; to identify “natural background” radiation, believing that a minimal threshold existed and that amounts below that threshold were not harmful or even beneficial; and to assess the genetic effects of atomic weapons in ways that would alleviate public and scientific fears (and limit potential economic liability) concerning the mutagenic effect of radiation. Meanwhile, in Nye County, Nevada, downwind rural communities—Mormons who supported government nuclear testing—began noticing that their cattle, sheep, children, and wildlife were ill or dying. The AEC knowingly disregarded and covered up evidence correlating the death of sheep to radiation exposure.

As the research in this volume shows, the cover-up continues, and victims and their families have had to work hard to get accurate information about what was done to them and even harder to get any kind of remedy. The difficulty experienced by downwinders and atomic veterans in getting compensation has been compounded by the fact that the US government, claiming a prerogative originally exercised by European monarchs before the United States was founded, claimed “sovereign immunity” from lawsuits by citizens alleging harm from their government. Finally, in 1990 the US Congress enacted the Radiation Exposure Compensation Act (RECA). Throughout the testing and the campaign for compensation, rural downwind communities divided over the question of jobs versus radiation. In Nevada, the preponderance of the population has always supported nuclear testing, although they—along with almost every elected official in Nevada—oppose the federal government’s plan for a high-level nuclear-waste storage facility at Yucca Mountain (Macfarlane and Ewing 2006).

The two papers on nuclear testing and contamination in the Soviet Union, one on Chelyabinsk and the other on Kazakhstan (Garb, this volume; Werner and Purvis-Roberts, this volume), indicate that environmental disasters occurred around weapons-grade plutonium facilities. Again there was secrecy: officials denied the truth, and scientists dealt with a technology they did not fully understand. They did not yet know that plutonium would not dissolve in water, thereby losing its lethal power. Although Russians were evacuated after the 1957 Kyshtym explosion, minority Tatars were left behind as human subjects in a grotesque experiment. In Chelyabinsk, twenty-two villages along the river were evacuated, and evacuees had to sign papers swearing themselves to secrecy. The Soviet state, in a prequel to the Chernobyl disas-

ter thirty years later (Petryna 2002), showed a general disregard for the health of all peoples, including plant employees. Not until 1989 did the Soviets acknowledge the Mayak disasters. Yet a government official was quoted as saying, "We've been doing this [producing material for nuclear weapons] for 30 years with no negative effect on the environment." (The same optimism is of course recorded for various AEC directors in the United States.) In Kazakhstan, people were exposed to harm from some 456 nuclear tests between 1949 and 1989. Apparently the Soviet military did not know how fallout would affect this area of nomadic pastoralists and low population density. The same pattern of testing nuclear weapons near or on the land of vulnerable minority populations and exposing them to contamination now seems to be repeating itself in India and Pakistan (Ramana and Reddy 2003).

Several chapters in this volume deal with the abuse of government trust responsibilities. In the Pacific, after all, the territories were under US control under a United Nations trusteeship before the movement for independence was initiated. On the mainland, the public health damages to Navajo uranium miners abused the trust relationship that exists between Indian reservations and the federal government. Damages for the workers and the community have come too little and too late. For the Navajo the land is sacred, life giving, and sustaining (Hiesinger 2002:40); for the nuclear industry it is a wasteland (Kuletz 1998:197). Places the Navajo use for medicine and sacred ritual the nuclear industry classifies as desert wastelands. It is hard to call this behavior by the superpowers anything other than environmental racism. It is revealing that in both the United States and the Soviet Union, one a democracy and the other a totalitarian regime, as Stewart Udall observed, "the Cold Warriors were willing to sacrifice their own people in their zeal." Ironically, the United States and the Soviet Union may have hurt their own citizens and environments more than each other's.

With a few noteworthy exceptions, nuclear scientists distanced themselves from the suffering that resulted from their endeavors. They were socially and physically distant from the uranium miners, nuclear production-line workers, and villagers whose health has been most damaged by nuclear weapons testing and production, and they often dismissed the concerns of ordinary people as nothing more than ignorant "radiophobia." Of course, from the vantage point of current knowledge, it is clear that the scientists and government bureaucrats suffered from a Panglossian radiophilia. Only in recent years have victims begun to receive compensation from the state for the harms they suffered at the hands of the nuclear state, and the compensation, as we shall see below, is often patchy, capricious, and inadequate. Meanwhile, weapons scientists today often exculpate their forebears by resorting to a progress narrative that excuses the sins of the fathers as the result of an ignorance now allegedly erased by scientific progress.

Whose Survival?

Three concepts (Nader 1983) are useful in understanding the environment surrounding the development and testing of weapons of mass destruction: bureaucratic fantasy,³

organizational survival, and short-term self-interest. In his 1999 book *Mission Improbable: Using Fantasy Documents to Tame Disaster*, sociologist Lee Clarke shows that bureaucracies confronted with potential human disasters often engage in the preparation of hyper-rational "fantasy documents" that may strike others as surreal exercises in bureaucratic denial. Examples include plans developed by the US Post Office under the Reagan administration to make sure people filled out change-of-address cards so their mail could be forwarded after their cities were destroyed in a nuclear war. The Federal Emergency Management Administration developed plans at the same time to evacuate cities under threat of nuclear attack by having all those with license plates ending in odd numbers leave a day before the rest. Institutional bureaucracies are particularly prone to this kind of institutionalized insanity, which has not been adequately recognized as a social problem.

The concept of organizational survival means that no matter what the explicit goals of an organization are, its most central, albeit usually implicit, goal is its own survival. Although both bureaucratic fantasy and organizational survival are ubiquitous, they are of particular importance in the arms race. If institutionalized fantasy thinking operates among military and defense people, behavior in their circles that outsiders might think crazy (such as the idea that someone can win a nuclear war if there are enough shovels) goes undetected and unseated. This situation can persist long enough to ensure that many organizations invest so much in policies arising from this insanity that organizational survival begins to take precedence over national or even personal survival. Ideologies and rationales are developed within groups to defend their plan of action. These defenses are reinforced by actual or perceived outside criticism and become so strong that the insanity is further strengthened even though ideological obsessions among bureaucrats may be more the result of perceived powerlessness than the political persuasion of the government.

The third concept—self-interest—has to do with the defense industry as both self-interested and profit motivated. Although President Dwight D. Eisenhower warned of the perils of the military-industrial complex, it was during the Eisenhower years that the theory developed among liberal politicians, economists, and business that high military spending would stimulate the economy. The economist Seymour Melman first dispelled such theories in his book *Our Depleted Society* (1965), in which he argued that the dominance of a permanent war economy in the United States had led to serious underinvestment in science, engineering, and technology for civilian ends. Nevertheless, the dominant theory was put into practice during the Kennedy administration through an enormous increase in military spending and the training of science and engineering graduates for careers in the armaments industry. Due to government sponsorship, defense industries profit from the benefits of long-term contracts, interest-free loans, payment by government for most plant and capital equipment, and government willingness to pay prices subjected to continuous upward renegotiation. These industries are among the biggest, most powerful, and most technologically advanced units of economic power in the country, and US national security

policy is directed by elite groups largely recruited from business. *Why We Fight*, a recent documentary about US military involvements since Eisenhower's famous farewell address, shows that the military-industrial complex has seemingly become normalized, an accepted phenomenon in which lessons not learned predominate. As government contractors spread government wealth among the fifty states, turning the military budget into a surrogate welfare and development budget, it becomes increasingly difficult to cancel military programs. In his book *Wild Blue Yonder* (1988), Nick Kotz tells the story of the Carter administration's failed attempt to cancel the B-1 bomber in the face of an alliance of contractors who had ensured that every state in the Union had been given some piece of the B-1 to build. With so many converging interests, it becomes ever more difficult to arouse indignation against the toxic effects of military programs, even though in many of these same states radiation sicknesses and general environmental contamination—what some call atomic harvest—are there for all to know. There are enormous mental gaps between industrial and business policies and those who suffer the consequences—what economists call externalities.

The Power of Voices

Silence can be addressed only by speaking out. Whether one calls for remedy, redress, reparations, damages, or compensation, it is clear from the outset that no amount of damages or compensation alone can cure nuclear wrongs. From 1951 to 1992, the United States carried out 100 atmospheric and 828 underground nuclear tests at the Nevada Test Site alone, without enough knowledge to evaluate the dangers the tests posed. In an era when dissent was discouraged and the Cold War provided an atmosphere of military emergency, it was easy to ignore harms to human bodies that would be masked by a twenty-year latency period. As the authors in this volume have indicated, there could be long periods between research results and allowed publication: the 1961 Weiss study and the 1963 Knapp study on radioactive iodine in the food chain were not released until 1978. After the Cold War ended, thanks to Secretary of Energy Hazel O'Leary's aggressive declassification policy more materials on testing consequences came to light. In view of what we know today, it is remarkable that there is so little public opposition to the Bush administration's current plans to build a new facility for the production of plutonium pits in nuclear weapons and, possibly, design a new generation of nuclear warheads.

It has often been said that the only thing we learn from history is that we do not learn from history. The principles of organizational survival, profit making, and bureaucratic fantasy contribute to the failure. However, in 2006 people do know what they did not know in the first years of nuclearism, and they are pushing for redress. From the mid-1970s to the 1980s, people began to sue the government. One of the most publicized cases was the work of Stewart Udall on behalf of the uranium miners (see Udall 1994). The Mormon ranchers downwind of the Nevada Test Site were active in pursuit of legal redress, and grassroots support groups from Hanford to the Southwest to the Arctic were critical in testifying before congressional committees,

developing registries of victims, and more (see Turner, this volume). Finally, all due to activists, attorneys, legislators, scientists, and radiation victims, RECA was signed into law in 1990. In 2000 RECA amendments were signed into law. As Dawson and Madsen note in chapter 6, the compensation is rather minimal—from \$50,000 to \$100,000 in most cases. This is less than the annual salary of an average Washington lobbyist and much less than victims of comparable damage would earn from a medical malpractice suit. In the Arctic, award settlements of \$7 million included \$67,000 to each study participant and another \$1.36 million for community damages.

These limited awards are a drop in the bucket given what is still needed, not only to compensate the sick and the families of people who have died but also to clean up former testing and nuclear weapons facilities. And the decisions are difficult to make. At Rocky Flats in Colorado (see Satterfield and Levin, this volume), there was a crisis in confidence in public policy when citizens participated in hearings. They were being asked to sacrifice human health for dollars, and tradeoffs in cleaning up the contamination were not what people wanted. In spite of facilitators at these public meetings, there to ensure free and open debate, citizens lost faith in militarized science. In the Marshall Islands, judgments from the Nuclear Claims Tribunal have little meaning when the US Congress fails to provide the monies to pay awards. To date, no judicial mechanism appears to exist to address abuses and compensate for human radiation experiments in Peru and the Amazon. And what about fallout victims in the US states of Idaho, Colorado, and Wyoming? Still pending.

In addition to monetary remedy, victims seek accountability. They seek apology from their government. They seek "never-again" policies. They seek transparency. They do not need facilitators to cool out public participation and prepare them for "reasonable" negotiations; they need a chance to voice their righteous anger and be heard by their governments.

Does Democracy Matter?

There is democratic form and democratic practice. When people in a democratic society cede too much power to the government, what happens is the sort of activity recorded in this volume: the government becomes authoritarian and unaccountable. When victims demand accountability, as in some cases also recorded here, practice may begin to conform to democratic form. In the stories told in this volume, institutionalized racism compounds the erosion of democracy. The people carrying out nuclear tests and weapons development saw some places as basically "empty," since the few who lived there were for the most part indigenous peoples or other minorities. Meanwhile, for all Americans, the denial, the censoring, and the suffering were apparently justified by the needs of the national security state and the military-industrial complex. Propaganda becomes intermixed with scientific research: "Fallout is safe," "Exposure is external," "We can win a nuclear war." And in the final act of cowardice, the victim assumes the burden of proof.

In the Soviet Union the picture is not much different. The level of secrecy in the Soviet Union was intense, with entire cities off-limits (and off maps) to the general Russian population and an even greater constriction of scientific freedom than in Cold War America. Not until Gorbachev's glasnost policy emerged in the late 1980s were people free to organize political movements that eventually, in the case of Kazakhstan, led to the closure of the Semipalatinsk test site in 1991. For a transitory moment in the mid-1990s, environmental activists around Chelyabinsk, Krasnoyarsk, and Tomsk publicly pressed for greater disclosure and accountability from the traditionally secretive Russian nuclear weapons complex. In the late 1980s, the renowned Kazakhstani poet Olzhas Suleimenov appeared on television to read his poetry, only to throw away his script and appeal to the Kazakhstani people to attend an impromptu meeting to protest continued nuclear testing in Kazakhstan—a meeting attended by thousands of Kazakhstani citizens gingerly learning the practice of democracy. The Kazakhstani protestors reached out to Americans protesting continued US nuclear testing and formed the Nevada-Semipalatinsk Movement. They realized that the nuclear arms race had inextricably linked the fates of Soviets and Americans in a maze of mirrored positions, and that they would prosper or perish together. They imagined not a community of nation-states locked in conflict but a community of the afflicted whose solidarity undermines the military business as usual of generals, politicians, and military contractors. Although scientists defended their positions in the name of national security, political activists struggled to secure medical care and compensation, making their case to the government as well as to international NGOs and other international organizations. Health and mortality statistics are still difficult to obtain and will become more so as the Russian military-industrial complex tries to make a comeback.

When the Soviet Union collapsed, the government became less authoritarian; there were more public discussions about the harmful effects of nuclear testing, culminating in 1991 when Kazakhstan became an independent nation. More recently, scientists are defending their version of the past, and the victims of nuclear testing still await apologies and compensation commensurate with their difficulties. Much the same is reported for Chelyabinsk and the 1957 Kyshtym explosion, known about by Western powers but not made public either here or there, making Western powers complicit with the Soviets, perhaps because similar (if less severe) incidents were occurring in the United States and Britain. Secrecy was beneficial to all parties.

The Soviet practice of controlling health statistics was similar to that in the United States, and the compensation offered to victims is even less adequate in Russia and the former Soviet republics. The Chernobyl law, which allows government allocations to those affected by the Chernobyl accident, was supposed to apply also to the Chelyabinsk region. Some Russian scientists attributed the health problems there to radiophobia, and nothing was done. We are told that doctors who spoke openly about health problems in the 1990s are no longer talking. The environmental activism that began under Gorbachev is now threatened, ever since Russian president Vladimir Putin spoke out in 2003 against overseas funding of political activities in Russia and

passed laws to restrict it. Meanwhile the victims wait and suffer—here and there.

Perhaps the most ubiquitous inequity in democratic societies has been the inability of people to participate in decisions about that ultimate equity instance—the likelihood of survival. And people in the United States are in no better position in terms of decision making than people in nondemocratic states. One of the dangers of the contemporary world is that the general public is not fully aware of the risks and uncertainties it faces from the activities of the national security state. And as Bronislaw Malinowski put it for the Trobrianders of the western Pacific, people practice more magic when they find themselves afloat in “unknown and dangerous waters.” For this reason, we might conclude that scientists—military scientists—are less competent than is generally believed to be charged with the responsibilities for policies in “unknown and dangerous waters” that lead to the ultimate equity instance—human survival.

Notes

1. On Oppenheimer and Groves, see Bird and Sherwin (2005); McMillan (2005); Norris (2002); Rhodes (1986).
2. The tests are listed at <http://nuclearweaponarchive.org/Usa/Tests/index.html>.
3. Laura Nader (1983) referred to this behavior as the result of institutionalized insanity.

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